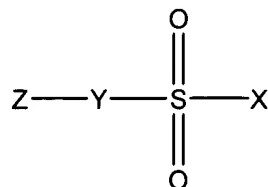


In the claims

Claims 1-33. (**canceled**)

34. (**withdrawn**) A coating for contacting a plant surface comprising an effective amount of an anti-fouling compound represented by general structure 1:



1

wherein

X represents -O(aryl), -O(acyl), -O(sulfonyl), -CN, F, Cl, or Br;

Y represents O, S, Se, or NR;

Z represents optionally substituted alkyl, heteroalkyl, cycloalkyl, heterocycloalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, or  $-(\text{CH}_2)_m\text{-R}_{80}$ ;

R represents independently for each occurrence hydrogen, alkyl, heteroalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, or  $-(\text{CH}_2)_m\text{-R}_{80}$ ;

$\text{R}_{80}$  represents independently for each occurrence aryl, cycloalkyl, cycloalkenyl, heterocyclyl, or polycyclyl; and

m is an integer in the range 0 to 8 inclusive; or a salt thereof,

wherein the coating releases the compound or a biologically active fragment thereof when in contact with a liquid or vapor.

35. (**withdrawn**) The coating of claim 34, wherein X represents F, Cl, or Br.

36. (**withdrawn**) The coating of claim 34, wherein Y represents O.

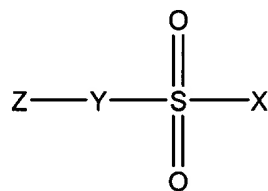
37. (**withdrawn**) The coating of claim 34, wherein Z represents optionally substituted alkyl, aryl, or  $-(\text{CH}_2)_m\text{-R}_{80}$ .

38. **(withdrawn)** The coating of claim 34, wherein Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
39. **(withdrawn)** The coating of claim 34, wherein Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
40. **(withdrawn)** The coating of claim 34, wherein Y represents NR and R represents H or alkyl.
41. **(withdrawn)** The coating of claim 34, wherein X represents F, Cl, or Br; and Y represents O.
42. **(withdrawn)** The coating of claim 34, wherein X represents Cl; and Y represents O.
43. **(withdrawn)** The coating of claim 34, wherein X represents F, Cl, or Br; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .
44. **(withdrawn)** The coating of claim 34, wherein X represents Cl; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .
45. **(withdrawn)** The coating of claim 34, wherein X represents F, Cl, or Br; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
46. **(withdrawn)** The coating of claim 34, wherein X represents Cl; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
47. **(withdrawn)** The coating of claim 34, wherein X represents F, Cl, or Br; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
48. **(withdrawn)** The coating of claim 34, wherein X represents Cl; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.

49. **(withdrawn)** The coating of claim 34, wherein Y represents O; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .
50. **(withdrawn)** The coating of claim 34, wherein Y represents O; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
51. **(withdrawn)** The coating of claim 34, wherein Y represents O; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
52. **(withdrawn)** The coating of claim 34, wherein X represents F, Cl, or Br; Y represents O; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .
53. **(withdrawn)** The coating of claim 34, wherein X represents Cl; Y represents O; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .
54. **(withdrawn)** The coating of claim 34, wherein X represents F, Cl, or Br; Y represents O; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
55. **(withdrawn)** The coating of claim 34, wherein X represents Cl; Y represents O; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
56. **(withdrawn)** The coating of claim 34, wherein X represents F, Cl, or Br; Y represents O; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
57. **(withdrawn)** The coating of claim 34, wherein X represents Cl; Y represents O; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
58. **(withdrawn)** The coating of claim 57, wherein the coating is temporary.

Claims 59-64 (**canceled**)

65. (**withdrawn**) The coating of claim 34, wherein the release of the compound is at a constant rate.
66. (**withdrawn**) The coating of claim 34, which is a liquid.
67. (**withdrawn**) The coating of claim 34, which is a gas or vapor.
68. (**withdrawn**) The coating of claim 34, which is a paste or other semi-solid state.
69. (**withdrawn**) The coating of claim 34, which is a solid.
70. (**withdrawn**) The coating of claim 34, which is a liquid and solidifies on a plant surface.
71. (**currently amended**) A coating for contacting a plant surface comprising an effective amount of an anti-fouling compound represented by general structure 2:



2

wherein

X represents -OH, ~~O(aryl), O(acyl), O(sulfonyl),~~ CN, F, Cl, or Br;

Y represents O, S, or Se, ~~or~~ NR;

Z represents optionally substituted alkylphenyl, ~~heteroalkylphenyl,~~ cycloalkyl, heterocycloalkyl, ~~heteroaryl, aralkyl, heteroaralkyl,~~ arylphenyl, ~~heteroarylphenyl~~ or  $-(\text{CH}_2)_m\text{-R}_{80a}$  wherein when Z is substituted, a substituent is selected independently for each occurrence from the group consisting of halo, azido, alkyl, aralkyl, alkynyl, cycloalkyl, alkoxy, nitro, imino, amido, silyl, alkylthio, sulfonyl, sulfonamido, formyl, heterocyclyl, aryl, heteroaryl, and trifluoromethyl;

~~R represents independently for each occurrence hydrogen, alkyl, heteroalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, or  $-(\text{CH}_2)_m\text{-R}_{80b}$ ;~~

R<sub>80</sub> represents independently for each occurrence aryl, cycloalkyl, cycloalkenyl, heterocyclyl, or polycyclyl; and

m is an integer in the range 0 to 8 inclusive; or a salt thereof,

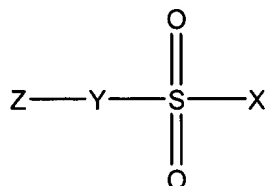
wherein the coating releases the compound or a biologically active fragment thereof when in contact with a liquid or vapor.

72. **(currently amended)** The coating of claim 71, wherein Z represents optionally substituted alkylphenyl, or arylphenyl, ~~or heteroarylphenyl~~.

73. **(previously presented)** The coating of claim 71, wherein Z represents 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.

74. **(withdrawn)** The coating of claim 34, wherein Y represents NR and R represents H or alkyl.

75. **(currently amended)** A coating for contacting a plant surface comprising an effective amount of an anti-fouling compound represented by general structure 3:



3

wherein

X represents -OH, ~~O(aryl), O(acyl), O(sulfonyl),~~ CN, F, Cl, or Br;

Y represents O, S, or Se, ~~or NR~~;

Z represents optionally substituted branched alkyl or unbranched C<sub>2</sub>-C<sub>7</sub> alkyl, ~~heteroalkyl, cycloalkyl, heterocycloalkyl,~~ aryl, ~~heteroaryl, aralkyl, heteroaralkyl,~~ or -(CH<sub>2</sub>)<sub>m</sub>-R<sub>80</sub>, wherein when Z is substituted, a substituent is selected independently for each occurrence from the group consisting of halo, azido, alkyl, aralkyl, alkynyl, cycloalkyl, alkoxy, nitro, imino, amido, silyl, alkylthio, sulfonyl, sulfonamido, formyl, heterocyclyl, aryl, heteroaryl, and trifluoromethyl;

~~R represents independently for each occurrence hydrogen, alkyl, heteroalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, or  $(CH_2)_m$ -R<sub>80</sub>;~~

R<sub>80</sub> represents independently for each occurrence aryl, cycloalkyl, cycloalkenyl, heterocyclyl, or polycyclyl; and

m is an integer in the range 0 to 8 inclusive; or a salt thereof,

wherein the coating releases the compound or a biologically active fragment thereof when in contact with a liquid or vapor; and wherein the effective amount reduces the number of plant pathogens on a plant surface over about a 24 hour period by a factor of about 4 to about 15 relative to a control plant surface, which does not comprise the compound.

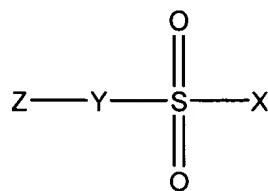
76. **(previously presented)** The coating of claim 75, wherein the effective amount reduces the number of pathogens by a factor of about 8.

77. **(previously presented)** The coating of claim 75, wherein the effective amount reduces the number of pathogens by a factor of about 10.

78. **(previously presented)** The coating of claim 75, wherein the effective amount reduces the number of pathogens by a factor of about 15.

79. **(withdrawn)** A method of preventing biofouling accumulation on a plant surface, comprising the steps of:

(a) providing an antifouling composition comprised of one or more compounds represented by general formula 4:



4

wherein

X represents -OH, -O(aryl), -O(acyl), -O(sulfonyl), -CN, F, Cl, or Br;

Y represents O, S, Se, or NR;

Z represents optionally substituted alkyl, heteroalkyl, cycloalkyl, heterocycloalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, or  $-(CH_2)_m-R_{80}$ ;

R represents independently for each occurrence hydrogen, alkyl, heteroalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, or  $-(CH_2)_m-R_{80}$ ;

$R_{80}$  represents independently for each occurrence aryl, cycloalkyl, cycloalkenyl, heterocyclyl, or polycyclyl; and

m is an integer in the range 0 to 8 inclusive; or a salt thereof,

wherein the composition releases the compound or a biologically active fragment thereof when in contact with a liquid or vapor; and

(b) applying said antifouling composition to said plant surface.

80. **(withdrawn)** The method of claim 79, wherein X represents -OH, F, Cl, or Br.

81. **(withdrawn)** The method of claim 79, wherein Y represents O.

82. **(withdrawn)** The method of claim 79, wherein Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .

83. **(withdrawn)** The method of claim 79, wherein Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.

84. **(withdrawn)** The method of claim 79, wherein Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.

85. **(withdrawn)** The method of claim 79, wherein R represents H or alkyl.

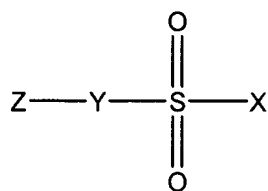
86. **(withdrawn)** The method of claim 79, wherein X represents -OH, F, Cl, or Br; and Y represents O.

87. **(withdrawn)** The method of claim 79, wherein X represents -OH or Cl; and Y represents O.

88. **(withdrawn)** The method of claim 79, wherein X represents -OH, F, Cl, or Br; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .

89. **(withdrawn)** The method of claim 79, wherein X represents -OH or Cl; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .
90. **(withdrawn)** The method of claim 79, wherein X represents -OH, F, Cl, or Br; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
91. **(withdrawn)** The method of claim 79, wherein X represents -OH or Cl; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
92. **(withdrawn)** The method of claim 79, wherein X represents -OH, F, Cl, or Br; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
93. **(withdrawn)** The method of claim 79, wherein X represents -OH or Cl; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
94. **(withdrawn)** The method of claim 79, wherein Y represents O; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .
95. **(withdrawn)** The method of claim 79, wherein Y represents O; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
96. **(withdrawn)** The method of claim 79, wherein Y represents O; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
97. **(withdrawn)** The method of claim 79, wherein X represents -OH, F, Cl, or Br; Y represents O; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .
98. **(withdrawn)** The method of claim 79, wherein X represents -OH or Cl; Y represents O; and Z represents optionally substituted alkyl, aryl, or  $-(CH_2)_m-R_{80}$ .

99. **(withdrawn)** The method of claim 79, wherein X represents -OH, F, Cl, or Br; Y represents O; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
100. **(withdrawn)** The method of claim 79, wherein X represents -OH or Cl; Y represents O; and Z represents optionally substituted alkylphenyl, heteroalkylphenyl, arylphenyl, or heteroarylphenyl.
101. **(withdrawn)** The method of claim 79, wherein X represents -OH, F, Cl, or Br; Y represents O; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
102. **(withdrawn)** The method of claim 79, wherein X represents -OH or Cl; Y represents O; and Z represents methyl, octyl, 4-(2-methylpropyl)phenyl, 4-(1,1-dimethylethyl)phenyl, 4-(1,1-dimethylpropyl)phenyl, 4-pentylphenyl, 4-(1-methyl-1-phenylethyl)phenyl, or 4-(1-methylheptyl)phenyl.
103. **(withdrawn)** A plant resistant to biofouling, comprising:
- (a) a plant surface; and
  - (b) an antifouling layer on said surface with said antifouling layer comprising one or more compounds of general formula 5:



5

wherein

X represents -OH, -O(aryl), -O(acyl), -O(sulfonyl), -CN, F, Cl, or Br;

Y represents O, S, Se, or NR;

Z represents optionally substituted alkyl, heteroalkyl, cycloalkyl, heterocycloalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, or  $-(CH_2)_m-R_{80}$ ;

R represents independently for each occurrence hydrogen, alkyl, heteroalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, or  $-(CH_2)_m-R_{80}$ ;

$R_{80}$  represents independently for each occurrence aryl, cycloalkyl, cycloalkenyl, heterocyclyl, or polycyclyl; and

m is an integer in the range 0 to 8 inclusive; or a salt thereof,

wherein the antifouling layer releases the compound or a biologically active fragment thereof when in contact with a liquid or vapor.